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**Declaration under Rule 4.17:**

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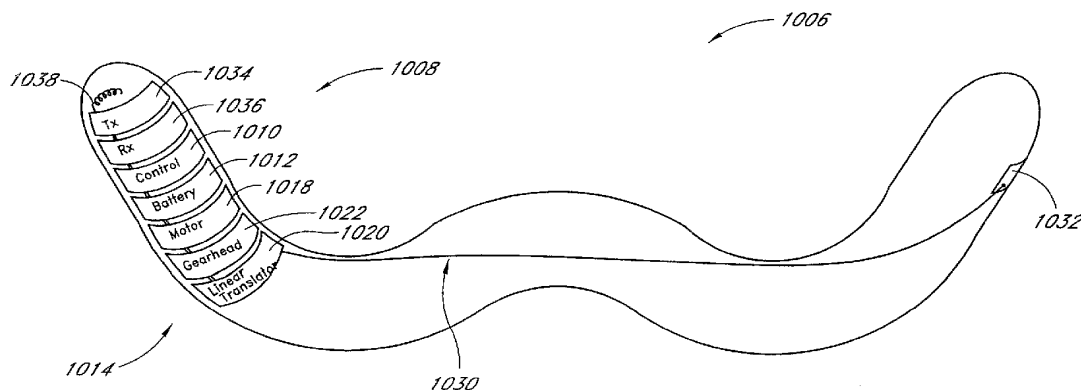
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(54) Title: REMOTELY ACTIVATED MITRAL ANNULOPLASTY SYSTEM AND METHODS



(57) Abstract: In one embodiment, implants (1006) and methods for remote remodeling of a mitral valve annulus are disclosed. The implant (1006) comprises a body transformable from a flexible configuration for navigation to a treatment site, to a remodeling configuration for, in one application, applying pressure to the posterior leaflet of the mitral valve. On board electronics (1010) allow post deployment adjustment of the implant.

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# INTERNATIONAL SEARCH REPORT

International Application No

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**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61F2/24 A61B5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.                       |
|------------|--|---|
| P,X        | WO 2004/019816 A (MD3 TECHNOLOGIES LLC;<br>CARTLEDGE, RICHARD, G; LEE, LEONARD, Y)<br>11 March 2004 (2004-03-11)<br><br>page 3, line 14 - page 5, line 17<br>page 18, lines 5-15<br>page 21, lines 12-36<br>figures 1-9, 25-27 | 1-4,<br>9-13, 19,<br>22,<br>26-28,<br>32-34 |
| A          | US 2002/151961 A1 (LASHINSKI RANDALL T ET<br>AL) 17 October 2002 (2002-10-17)<br>the whole document  | 1-38  |
| A          | US 6 406 493 B1 (TU HOSHENG ET AL)<br>18 June 2002 (2002-06-18)<br>column 3, line 12 - column 8, line 21;<br>figures 1-4   | 1, 12, 13,<br>19, 22, 32                    |
| -/--       |  |   |

☒ Further documents are listed in the continuation of box C.

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| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |   |                       |
|--|---|-----------------------|
| Category °   | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
| A  | <p>US 4 863 460 A (MAGLADRY ET AL)<br/> 5 September 1989 (1989-09-05)<br/> column 5, line 6 - column 7, line 33;<br/> figure 4</p> <p>-----</p> | 1,22,32               |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US2004/022983

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|----|---------------------|----------------------------|---------------------|
| WO 2004019816                             | A  | 11-03-2004          | WO 2004019826 A1           | 11-03-2004          |
|   |    |                     | WO 2004019816 A2           | 11-03-2004          |
|   |    |                     | US 2004148021 A1           | 29-07-2004          |
|   |    |                     | US 2004249453 A1           | 09-12-2004          |
| <hr/>                                     |    |                     |                            |                     |
| US 2002151961                             | A1 | 17-10-2002          | US 2002103533 A1           | 01-08-2002          |
|   |    |                     | US 2004153146 A1           | 05-08-2004          |
|   |    |                     | CA 2433881 A1              | 08-08-2002          |
|   |    |                     | EP 1355590 A1              | 29-10-2003          |
|   |    |                     | JP 2004527277 T            | 09-09-2004          |
|   |    |                     | WO 02060352 A1             | 08-08-2002          |
|   |    |                     | US 2002103532 A1           | 01-08-2002          |
|   |    |                     | US 2001044568 A1           | 22-11-2001          |
| <hr/>                                     |    |                     |                            |                     |
| US 6406493                                | B1 | 18-06-2002          | US 2003191528 A1           | 09-10-2003          |
| <hr/>                                     |    |                     |                            |                     |
| US 4863460                                | A  | 05-09-1989          | US 4743253 A               | 10-05-1988          |
| <hr/>                                     |    |                     |                            |                     |